



Fire Protection Training

Procedures Handbook 4300

LADDERS

TOPIC: HOW TO PICKUP, CARRY, RAISE, CLIMB AND LOWER AN ALUMINUM SOLID BEAM 20' THREE SECTION EXTENSION LADDER – ONE PERSON METHOD

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a 20' three section extension ladder lying flat on a level surface with fly section up, a wall, appropriate personal protective equipment (PPE) and one assistant.

Behavior: The students shall pick up, carry, raise, climb and lower a 20' three section extension ladder, using the high shoulder carry and the beam ladder raise method under simulated fire conditions.

Standard: Following steps and procedures in proper sequence, according to the job breakdown with a minimum of 80% accuracy, within 4 minutes and 15 seconds.

MATERIALS NEEDED:

- One (1) Set of appropriate PPE per student per CAL FIRE policy
- One (1) 20' Three Section Extension ladder
- One (1) Assistant

REFERENCES: None

PREPARATION: A basic firefighting skill is the ability to handle a 20' three section extension ladder during emergency incident operations. With limited staffing on engines this skill becomes critical. If done improperly or in an unsafe manner the well-being of the firefighter and the public may be jeopardized.

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AND LOWER AN ALUMINUM SOLID
BEAM 20' THREE SECTION EXTENSION
LADDER – ONE PERSON METHOD

OPERATIONS

KEY POINTS

- | OPERATIONS | KEY POINTS |
|--------------------------|--|
| 1. Position student | 1a. On either side of ladder
b. At ladder balance point
c. Facing ladder tip, crouching with knee nearest ladder close to ground |
| 2. Grasp ladder | 2a. At balance point
b. On nearest beam
c. With overhand grip |
| 3. Rotate ladder | 3a. Up onto farthest beam
b. Perpendicular to ground
c. Using legs NOT back |
| 4. Move to ladder tip | 4a. While steadying ladder with hand nearest ladder
b. Bending at the waist
c. Walk to ladder tip |
| 5. Grasp ladder top beam | 5a. At tip of 2 nd fly section
b. With overhand grip |
| 6. Lift ladder | 6a. Using legs
b. In continuous fluid motion
c. Simultaneously push lower beam upward with working hand
d. Steadying ladder with free hand on top beam
e. Until ladder in full upright/vertical position with both butt spurs in contact with the ground |

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KEY POINTS

7. Extending 2nd fly section

- f. On bed section side
- 7a. Grasping both beams
 - b. From position facing bed section
 - c. Move around ladder to a position opposite of bed section and facing 2nd fly section
 - d. Steady ladder using continuous contact with hands
 - e. Grasping any rung on the 2nd fly section, steadying ladder with other hand
 - f. Comfortably grasp rung to avoid pinching fingers between 2nd and 1st fly sections

8. Announce “Fingers and toes”

- 8a. Loudly
 - b. Precautionary warning

9. Raise 2nd fly section

- 9a. Fully extend 2nd fly section
 - b. Ladder remaining in vertical position

NOTE: 2nd fly section may be raised in one continuous motion or in steps until fully extended. Control of the fly sections must be maintained at all times.

10. Lock in 2nd fly section

- 10a. Lowering 2nd fly section
 - b. Until pawls “lock” onto rung

11. Announce “Pawls locked”

- 11a. After visual inspection of pawls
 - b. Loudly

12. Prepare to carry ladder

- 12a. Move both hands to beams

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KEY POINTS

13. Announce "Clear"

- b. Visually check area into which tip of ladder will be lowered
- 13a. Loudly

14. Lower ladder

- b. Precautionary warning
- 14a. Facing corner of either ladder beam
 - b. With one hand on each beam
 - c. Tilt ladder towards self on a single beam
 - d. Slide hand on bottom beam upwards to balance point with palm up while walking backwards

15. Bring ladder to high shoulder carry position

- 15a. Dipping at knees slightly
 - b. Keeping back straight and using the legs
 - c. Leverage butt of ladder off the ground
 - d. Support lower beam with working hand
 - e. While supporting the top beam with the free hand
 - f. Adjust to position of comfort

16. Carry ladder

- 16a. To designated location
 - b. Butt end tilted slightly downward for balance and better visibility
 - c. Announcing "ladder coming through" prior to first step and when approaching other personnel

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OPERATIONS

KEY POINTS

17. Raise ladder

- d. Announcing "ladder coming around" prior to each turn or change of direction
- 17a. Upon reaching designated location
 - b. With fly section toward building
 - c. Lower butt end of ladder
 - d. Until butt spur on lower beam strikes ground
 - e. Simultaneously push lower beam of ladder upward with working hand
 - f. Steadying ladder with free hand on top beam
 - g. Until ladder in full upright\vertical position with both butt spurs in contact with the ground

18. Stabilize the ladder

- 18a. Grasping both beams
 - b. From position facing ladder and building
 - c. Placing instep of one foot against the beam of the ladder at the butt
 - d. Placing the inside portion of leg from the knee down against the same ladder beam
 - e. Moving opposite leg back one step for stability

19. Grasp halyard

- 19a. With both hands
 - b. Placing forearms across beams at shoulder height with elbows out

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KEY POINTS

20. Announce "Fingers and toes"

c. Thumbs positioned downward

d. Comfortable distance apart

20a. Loudly

b. Precautionary warning

21. Raise 1st fly section

21a. Utilizing halyard and hand over hand motion

b. Both hands in contact with the halyard

c. Ladder remaining in vertical position

d. To proper height

NOTE: In the event the student needs to grasp the ladder to maintain control, the beams, not the rungs, must be grasped.

22. Lock in 1st fly section

22a. Lowering fly section

b. Until pawls "lock" onto rung

23. Announce "Pawls locked"

23a. After visual inspection of pawls

b. Loudly

24. Lower ladder

24a. Into building

b. Slowly

c. Hands placed on beams at chest height

d. Ball of either foot on bottom rung

25. Tie off halyard

25a. With ladder between you and the building

b. Wrapping excess halyard around rung(s)

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KEY POINTS

26. Check climbing angle

- c. Tie off using clove hitch
- d. Utilize half hitch to secure excess halyard

26a. 75 degrees

- b. Facing ladder and building with toes against beams at butt of ladder
- c. Extend arms outward parallel to ground
- d. Palms reaching ladder rungs

27. Adjust climbing angle

27a. If necessary

- b. Facing side of either ladder beam
- c. Bending knees slightly
- d. Back straight
- e. Placing hands in front and back of ladder and on different rungs
- f. Lifting ladder into proper climbing position one step at a time

28. Heel the ladder

28a. Request an assistant to heel ladder or

- b. Secure the ladder to an anchor point on the building utilizing a clove hitch

29. Climb ladder

29a. Cautiously and smoothly

- b. Grasping alternate rungs in hand over hand fashion
- c. Stepping on alternate rungs in foot over foot fashion
- d. Check and announce "Pawls locked" prior to stepping on fly section

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KEY POINTS

30. Lock in with leg lock method

e. Until desired height reached

30a. Passing either leg between adjacent rungs

b. Wrapping foot back through ladder and anchoring toes over ladder beam

31. Work off the ladder

31a. Announcing designated side loudly

b. Extending both arms and hands fully in that direction

c. Working direction will be opposite leg lock side

32. Decend the ladder

32a. Cautiously and smoothly

b. Placing alternating hands on alternate rungs

c. Placing alternating feet on alternate rungs

33. Unsecure the ladder

33a. Dismissing person heeling the ladder or

b. Untie the clove hitch securing ladder to anchor point on building

34. Adjust climbing angle

34a. If necessary

b. Facing side of either ladder beam

c. Bending knees slightly

d. Back straight

e. Placing hands in front and back of ladder and on different rungs

f. Lifting and placing ladder nearer

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OPERATIONS

KEY POINTS

35. Untie the halyard

building to increase leverage for taking ladder out

35a. With ladder between you and building

b. If ladder needs to be repositioned, halyard must be tied

36. Taking the ladder out

36a. Facing the ladder and the building

b. With the ball of either foot on the lower ladder rung

c. Hands grasping the beams at chest height

d. With overhand grip

e. Leveraging the ladder away from the building

f. Until in full upright/vertical position

37. Stabilize the ladder

37a. Grasping both beams

b. From position facing ladder and building

c. Placing the instep of one foot against the beam of the ladder at the butt

d. The inside portion of the leg from the knee down against the same ladder beam

e. Moving the other leg back one step for stability

38. Grasp the halyard

38a. With both hands

b. Placing forearms across beams at shoulder height with elbows out

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KEY POINTS

39. Announce "Fingers and toes"

c. Thumbs positioned downward

d. Comfortable distance apart

39a. Loudly

b. Precautionary warning

40. Lower 1st fly section

40a. Raising fly section sufficient to unlock pawls

b. Utilizing both hands

c. Hand-over-hand motion on halyard to brake fly sections downward momentum

NOTE: In the event the student grasps the ladder to maintain control, the beams, not the rungs, must be grasped

41. Lock in 1st fly section

41a. Lowering fly section until pawls reach bottom rung

b. Raise fly until pawls lock on first rung of bed section

42. Announce "Pawls locked"

42a. After visual inspection of pawls

b. Loudly

43. Prepare to lower ladder

43a. Move hands to beams

b. Visually check area into which tip of ladder will be lowered

44. Announce "Clear"

44a. Loudly

b. Precautionary warning

45. Lower ladder

45a. Facing corner of either ladder beam

b. With one hand on each beam

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KEY POINTS

46. Bring ladder to high shoulder carry position

- c. Tilt ladder towards self on a single beam
- d. Slide hand on bottom beam upwards to balance point with palm up while walking backwards

46a. Bend at the knees

- b. Keeping back straight and using the legs
- c. Leverage butt of ladder off the ground
- d. Supporting lower beam with working hand
- e. While supporting the top beam with the free hand
- f. Adjust to position of comfort

47. Carry ladder

47a. To designated location

- b. Butt end tilted slightly downward for balance and visibility
- c. Announcing loudly "Ladder coming through" prior to first step and when approaching other personnel
- d. Announcing loudly "Ladder coming around" prior to turning or changing direction

48. Transition from high shoulder carry to vertical position

48a. Upon reaching designated location

- b. Lower butt end of ladder
- c. Until butt spurs on lower beam strikes ground
- d. Simultaneously push lower beam of

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OPERATIONS

KEY POINTS

49. Prepare to lower 2nd fly section

ladder upward with working hand

e. Steadying the ladder with free hand on top beam

f. Until ladder with full upright/vertical position with both butt spurs in contact with the ground

49a. Grasping both beams

b. From position facing bed section

c. Move around ladder to a position opposite of bed section and facing 2nd fly section

d. Steady ladder using continuous contact with hands

e. Grasping any rung on the 2nd fly section, steadying ladder with other hand

f. Comfortably grasp rung to avoid pinching fingers between 2nd and 1st fly sections

50. Announce "Fingers and toes"

50a. Loudly

b. Precautionary warning

51. Lower 2nd fly section

51a. Raising 2nd fly section sufficient to unlock pawls

b. Ladder remaining in a vertical position

NOTE: 2nd fly section may be lowered in one continuous motion or in steps until fully lowered. Control of the fly sections must be maintained at all times.

52. Lock in 2nd fly section

52a. Lowering fly section until pawls reach

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OPERATIONS

KEY POINTS

53. Announce "Pawls locked"

bottom rung

- b. Raise fly until pawls lock on second rung of first fly section

53a. After visual inspection of pawls

- b. Loudly

54. Prepare to lower

54a. Move hands to beams

- b. Visually check area into which tip of ladder will be lowered

55. Announce "Clear"

55a. Loudly

- b. Precautionary warning

56. Lower ground ladder

56a. Facing corner of either beam

- b. With one hand on each beam
- c. Tilt ladder towards self on a single beam
- d. Walk backwards
- e. Sliding hand on lower beam of base section of ladder while other hand supports top beam
- f. Until tip of ladder reached

57. Ground ladder

57a. Using legs

- b. In simultaneous, continuous fluid motion
- c. Grasping top beam of 2nd fly section with overhand grip
- d. Pivot body inward toward ladder
- e. Facing past tip

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OPERATIONS

KEY POINTS

58. Student repositions

f. Lower tip of ladder to ground while bending at knees

58a. Simultaneously rise and turn around to face butt of ladder

b. Steadying ladder by sliding hand along top beam

c. Bending at the waist

d. Walk to ladder balance point

59. Lay ladder on ground

59a. At balance point

b. Grasping top beam with overhand grip

c. Simultaneously bend at knees and stepping away from ladder lower top beam to ground

d. Fly section up

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HOW TO PICKUP, CARRY, RAISE, CLIMB AND
LOWER AN ALUMINUM SOLID BEAM
16' THREE SECTION EXTENSION
LADDER – ONE PERSON METHOD

APPLICATION:

Student will practice until proficient.

EVALUATION:

A performance examination.

ASSIGNMENT:

To be determined by instructor(s).